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With Rod and Chain

Every schoolboy knows that George Washington was a surveyor, and history records that Thomas Jefferson favored a decimal system of land surveys. According to the Jeffersonian plan, instead of making townships six miles square, land would have been "divided into hundreds of ten geographical miles square." The "geographical mile" is 6086.4 feet long, and a "hundred" in this system would have contained 850.4 acres. Jefferson's plan was not adopted. Instead, in 1785, the township system was authorized by an act of Congress for the survey of the "western territory". This system was later extended to the whole public domain. Before any land in Iowa was sold by the government it had to be surveyed.

In the summer of 1824, ten chiefs of the Sauk and Fox tribes relinquished their claim to all the land they possessed in the State of Missouri, except a triangular area lying between the Des Moines and Mississippi rivers south of the northern boundary of Missouri. This tract, comprising approximately 119,000 acres in what is now Lee County, was reserved "for the use of the half-breeds belonging to the Sock and Fox nations."

When possession of this area was first given to the half-breeds, the land was considered of but little value. As the population in the Half-breed Tract increased, however, the land became more valuable. Speculators urged the government to divide the tract and give each member of the half-breed group full title to his or her share of the land.

In response to these demands, William Clark, Superintendent of Indian Affairs, made arrangements on January 20, 1832, with Jenifer T. Sprigg, Surveyor for the State of Missouri, whereby Sprigg agreed to survey the Half-breed Tract. The contract stipulated that the surveyor should run "a line from the river Des Moines eastwardly, to the river Mississippi", and "survey into townships and fractional townships" all the lands south of the line surveyed. It was also agreed that he should "survey into sections", and "establish corners for quarter sections" in all the townships, "and meander all navigable streams" in the half-breed area.

In making the surveys trees were to be blazed and designated as marking corners in so far as that method was possible. If corners were established "where bearing or witness trees" could not be found within a reasonable distance, it was agreed that the corner should be marked "by in-

serting endways into the ground, and at least three inches below the natural surface thereof, a cylinder of charcoal, ten inches long and four inches in diameter". Over the charcoal deposit was to be erected a mound of earth, three feet high, six feet square at the base, and two feet square at the top. As a further precaution, strips of prairie sod were to be laid over the mound to prevent excessive weathering. In some instances the use of stones in lieu of charcoal was authorized, and if a corner was located in a ravine where a mound could not be erected, a site might be selected nearby on which to erect the mound. In any case full and complete explanations were to be made in the field notes.

Sprigg was directed to equip himself with "two two-pole chains, of fifty links each". One of these was to be adjusted to the standard in the office of the surveyor of lands for Illinois and Missouri, and comparisons and adjustments were to be made with the chain used, "at least once in every two days". There was also an authorization to hire chain carriers, an ax man, and flag man. Sprigg received \$5.00 per day for his services while surveying, and \$2.50 per day for the time spent in going to and coming from the field of labor. His expenses were paid with funds furnished by the federal government. The sum of

\$400 was advanced to him to purchase "horses, tent, camp equipage", and to buy provisions for himself and his assistants.

In 1816, more than a decade and a half before Sprigg contracted to survey the Half-breed Tract, Colonel John C. Sullivan had been employed by the United States government to survey and mark the boundaries of the Osage Indian lands in Missouri. In making this survey Colonel Sullivan ran a line eastward from a point one hundred miles north of the mouth of the Kansas River to a point on the Des Moines River. Sprigg's first task under his contract of 1832 was to continue the Sullivan line eastward from the Des Moines River to the Mississippi, to survey the present site of Keokuk, and establish township and section lines in the vicinity of the present town of Montrose.

In surveying, principal meridians and base lines are fundamental. The initial point from which all public land surveys in Iowa started was the intersection of the Fifth Principal Meridian and the Base Line. This Fifth Principal Meridian is the line which runs directly north from the old mouth of the Saint Francis River in Arkansas, passing through eastern Iowa along the eastern boundaries of Jones and Cedar counties. The Base Line used in the Iowa surveys, was the parallel of $34^{\circ} 44'$ north latitude, which crosses the central por-

tion of Arkansas just south of the city of Little Rock. These intersecting lines served as the reference lines controlling the measurement of the most extensive territory in the United States, including Arkansas, Missouri, Iowa, and most of Minnesota, South Dakota, and North Dakota. The southern part of Iowa is approximately 390 miles north of the Base Line. Accordingly, townships in Iowa are numbered from 65 north, at the southern point of Lee County, to 100 north, on the northern boundary of the State. Since the Fifth Principal Meridian passes through eastern Iowa, lands are designated by east or west ranges. Thus the eastern extremity of Clinton County is in Range VII east of the Fifth Principal Meridian, while the western extremity of Plymouth County lies in Range XLIX west.

From the time that the first land measurements were made by Sprigg in 1832, the work of public surveying continued in the Iowa country. Though the surveyors could not keep up with the settlers, the network of township lines rapidly spread. Special unofficial surveys were made to facilitate the sale of lots in new town sites. In the fall of 1833, for example, the site of Dubuque, "or what was believed would be comprehended within the limits of any city that should be built", was surveyed by George W. Harrison, an engineer from

Galena. During the same year William R. Ross surveyed a small area at the site of Burlington.

In the fall of 1835 the western boundary of the Black Hawk Purchase was surveyed and marked. This line was begun on the Missouri boundary at a point fifty miles west of the Mississippi River near the present southeast corner of Davis County and extended northeastward at an angle of 28° to a point on the Cedar River near the northeast corner of Johnson County. Thence it was projected northwestward at an angle of 29° and $15'$ to the southern boundary of the Neutral Ground in what is now Fayette County, thence along that line twenty-seven miles and fifty chains to the Turkey River, and from there to the Painted Rock on the Mississippi River — a total distance of more than two hundred miles.

The systematic survey of Iowa began in 1836. William A. Burt, a United States deputy surveyor in Wisconsin Territory, was in charge of the work. He determined the location of the Fifth Principal Meridian and marked it between the first and second correction lines; that is, from the southern boundary of township 79 to the southern boundary of township 89 north. Beginning at what is now the southeast corner of Cedar County at the present site of Durant, he ran the line north along the meridian to the geographical center of

Dubuque County. Forty chains (one-half mile) north of the point of beginning he set a quarter section post and made a mound. At the second half-mile point he set a corner post for sections 25 and 36 and made another mound. In his notes he recorded: "Land Rolling good 2nd Rate Prairie Soil Sandy Loam".

Continuing northward, Burt surveyed and marked the meridian for a distance of sixty miles. Thence he ran a line (the beginning of the second correction line) about twelve miles east to the Mississippi River, and proceeded then to establish the range lines eastward from the meridian to the Mississippi. Thus Burt located the line upon which the legal description of all Iowa land depends. Reference to the Fifth Principal Meridian in every land title in the State is equivalent to a specific recognition of the pioneer work of W. A. Burt. What a memorial!

In making his surveys, the "course of every stream was noted, and the situation of every lake." Stone and other building materials were listed and described. Streams, springs, and other water sources were charted and their uses were suggested. The arduous task of surveying most of the Iowa section of the Fifth Principal Meridian and part of the second correction line over rough country was completed in eight days.

When Missouri became a State in 1821 the Constitution defined the northern boundary as the parallel of latitude which passed through the "rapids of the river Des Moines". This did not correspond to the Sullivan line established in 1816, but the discrepancy caused no trouble until settlement began. By that time the marks of the Sullivan line could scarcely be seen and settlers did not know whether they lived in Missouri or Iowa. A controversy having arisen over the collection of taxes, the legislature of Missouri in 1837 directed a resurvey.

The framers of the Constitution, in defining the boundary, meant to refer to the Des Moines Rapids in the Mississippi River. J. C. Brown, however, who was employed to make the resurvey, interpreted the words of the Constitution, "rapids of the river Des Moines", as referring to the Des Moines River and not the Mississippi. Accordingly, he found a small rapids in the Des Moines River near the present site of Keosauqua. There he began his survey, running a line due west. This line was several miles north of the old Sullivan line. The Brown line of 1837 is significant in Iowa history for it precipitated a controversy that came near resulting in civil war. In the end, however, the Sullivan line was accepted as the true boundary.

In August, 1836, contracts were made with three experienced deputy surveyors "for the survey of the exterior township lines in the whole of the Sac and Fox cession, west of the Mississippi river." In the following year, Samuel Williams, Chief Clerk in the Surveyor General's office at Cincinnati, reported that the surveys of the township lines were completed with the exception of a few townships south of the Des Moines River. The whole cession, excepting the fractional townships adjoining the Indian boundary line, was under contract for subdivision into sections, and twenty-four deputy surveyors were engaged in this work. About forty townships had already been subdivided, and Williams expressed the hope that the survey of this land might be finished by the fifteenth of February, 1838.

These early surveyors met with many hardships. Surveying parties were often far from the most advanced pioneer settlement. Accordingly, they were obliged to carry with them tents, supplies of provisions, and a complete outfit for a trip extending, in some cases, over many months. On such occasions only very limited varieties of food and clothing were at hand. "A barrel or two of salt pork, flour in barrels, navy beans, with sugar, coffee, salt and pepper", constituted a typical larder.

Occasionally, however, the food supply was varied by the capture of wild game. And now and again an unusual incident varied the drab pattern of life. One of the early surveyors has written: "I remember one of the boys shot a deer, and once we found a 'bee tree' containing several gallons of honey." Again he recalled that, "with the aid of a big dog, a jack staff and a convenient snow bank we captured a two hundred and fifty pound wild hog." Incidents of this kind helped not only to replenish the larder, but also to break the monotony of the frontier.

The enormous task of surveying Iowa was well begun a hundred years ago. Base lines, meridians, and correction lines had been established. The southern boundary of Iowa had been twice surveyed. Township lines had been located and most of the townships throughout the area of the Black Hawk Purchase had been subdivided into sections. In addition to these governmental surveys, numerous town sites had been platted by private enterprise. Surveying parties pushed the frontier ever westward, and established landmarks in every part of the Black Hawk Purchase. Although Iowa was still a part of Wisconsin Territory, the official survey was, in 1837, well on its way toward completion.

J. A. SWISHER